

**CSE302/ISE302:  
Professional Ethics for Computer Science**

**Lecture 2: Ethics for IT Professionals  
and IT Users**

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**Objectives**

- Are IT workers professionals?
- What relationships must an IT professional manage, and what key ethical issues can arise in each?
- How do professional organizations, codes of ethics, certification, and licensing affect ethics of IT professionals?
- What are the common ethical issues that face IT users?
- What approaches can support the ethical practices of IT users?

**IT Professionals**

A **profession** is a calling that requires

- specialized knowledge and trained judgment
- long and intensive intellectual preparation

Partial list of IT specialists

- programmers
- systems analysts
- software engineers
- database administrators
- local area network (LAN) administrators
- chief information officers (CIOs)

Legal perspective

- IT workers are not recognized as professionals, because they are not licensed.
- Consequently, IT workers are not liable for malpractice

**Professional Relationships That Must Be Managed**

IT professionals have relationships with:

- employers
- clients
- suppliers
- other professionals
- IT users
- society at large

**Relationships Between IT Professionals and Employers**

IT professionals must set an example and enforce policies regarding the ethical use of IT

Software piracy is the act of illegally making copies of software or enabling others to access software to which they are not entitled

Software piracy is an area in which IT professionals can be tempted to violate laws and policies

The Business Software Alliance (BSA) is a trade group that represents the world's largest software and hardware manufacturers

- its mission is to stop the unauthorized copying of software produced by its members
- penalties can be up to \$100,000 per copyrighted work

**Members of BSA (as of July 2005)**

**TABLE 2-2** Members of Business Software Alliance (as of July 2005)

Adobe	Apple	Autodesk
Avid	Bentley Systems	Borland
Cadence	Cisco Systems	CNC Software/Mastercam
Dell	Entrust	HIP (Hewlett-Packard)
IBM	Intel	Internet Security Systems
Macromedia	McAfee, Inc.	Microsoft
PTC	RSA Security	SAP
SolidWorks	Sybase	Symantec
The Mathworks	UGS Corp.	VERITAS Software

## Relationships Between IT Professionals and Employers

### Protection of trade secrets

- information used in business, and that a company has taken strong measures to keep confidential
- examples: formula for Coke; Intel's chip manufacturing processes
- employees must sign a non-disclosure agreement (NDA)
- potential problems due to high IT employee turn-over
- example: Arrest Over Software Illuminates Wall St. Secret (*The New York Times*, August 24, 2009). Sergey Aleynikov is arrested by the FBI when his former employer, Goldman Sachs, accuses him of stealing software code for ultrafast stock trading.

### Whistle-blowing

- attracts attention to a negligent, illegal, unethical, abusive, or dangerous act that threatens the public interest
- example: an employee believes safety-critical software is being developed and sold without adequate testing, either openly or fraudulently

## Relationships Between IT Professionals and Clients

IT professional provides hardware, software, or services at an agreed cost and within an agreed time frame

Client provides compensation and access to necessary information and resources

Relationship is usually documented in a contract

IT projects are joint efforts in which vendors and customers work together

- difficult to assign blame when problems arise
- example: unanticipated bugs or limitations found by developer in client's existing systems

## Relationships Between IT Professionals and Clients

Ethical questions arise if a company recommends its own products and services, or products of affiliated companies, to remedy problems they have detected.

Ethical problems arise if a company does not provide full and accurate reporting of a project's status

- trying to avoid contractual penalties for being behind schedule
- trying to fix unanticipated problems before the customer notices

## Relationships Between IT Professionals and Clients

Fraud: obtain goods, services, or property through false statements

Fraudulent misrepresentation: instance of fraud where

- the party making the false statement is aware that it is false
- the party making the false statement does so to induce another party to enter into a contract, and
- the other party enters the contract as a result of the false statement and consequently suffers a loss.

Breach of contract

- one party fails to meet the terms of a contract (schedule slippage, cost overruns, missing functionality, ...)

Disputes may be settled in court. More often, they are settled out of court, to minimize legal costs and bad publicity.

## Relationships Between IT Professionals and Suppliers

Develop good relationships with suppliers

- deal fairly with suppliers
- do not make unreasonable demands

Bribery: providing money, property, or favors to someone in business or government to obtain a business advantage

- U.S. Foreign Corrupt Practices Act (FCPA) makes it a crime to bribe a foreign official, a foreign political party official, or a candidate for foreign political office

## Bribery

Bribes are made in secret, often made indirectly through a third party (to increase secrecy), and are intended to encourage an obligation for the recipient to act favorably toward the donor.

Gifts are made openly and publicly, are made directly from donor to recipient, and are intended only as a gesture of friendship or goodwill.

Laws and customs vary by country

Perceptions of donor and recipient can differ

Most companies require all gifts to be declared and that everything except "token" gifts be declined

Rules for government employees are even stricter

### Relationships b/w IT Professionals & Other Professionals

Professionals owe each other adherence to a profession's code of conduct

- there is a sense of mentorship and community

Ethical problems between members of the IT profession

- résumé inflation
- inappropriate sharing of corporate information
  - IT staff often have access to confidential corporate information, and may share it inappropriately in informal interactions with other IT professionals

### Relationships Between IT Professionals and IT Users

IT user: a person for whom a hardware or software product is designed

Duties of IT professionals to IT users:

- understand users' needs and capabilities
- provide products and services that best meet those needs
- establish an environment that supports ethical behavior by users
- discourage/prevent:
  - software piracy
  - inappropriate (e.g., personal) use of corporate IT resources
  - insecure computing practices

### Relationships Between IT Professionals and Society

Actions of an IT professional can affect society

Society expect professionals to not cause harm (=trust)

Society expects professionals to provide benefits

IT professionals should have a sense of responsibility, not to damage the IT community's reputation, as well as their own personal reputation

### The Ethical Behavior of IT Professionals

Corporations are taking actions to ensure good business ethics among employees

### Professional Codes of Ethics

A professional code of ethics states the values, principles, and rules by which members of a professional organization are expected to abide.

- Law does not provide complete guide to ethical behavior

Benefits for individual, profession, and society

- improves ethical decision making
- promotes high standards of practice and ethical behavior
- enhances trust and respect from the general public
- provides an evaluation benchmark

### Professional Organizations

Professional organizations enable

- building of professional and working relationships
- sharing of useful information (stay up-to-date)
- provides a stamp of adhering to defined standards

There is no single, preeminent organization of IT professionals

Most prominent organizations of IT professionals are:

- Association for Computing Machinery (ACM)
  - 80,000+ members
- Institute of Electrical and Electronics Engineers Computer Society (IEEE-CS)
  - 100,000+ members

### Certification

Indicates a professional possesses a particular set of skills, knowledge, or abilities, in the opinion of the certifying organization

Generally voluntary

- in contrast, licensing is required by law (for certain professions)

Carries no requirement to adhere to a code of ethics

- in contrast, licensing usually includes such a requirement

Can serve as a benchmark for mastery of a certain skill set and knowledge

- good way to document and structure the acquisition of new skills and knowledge
- get re-certified to stay up-to-date

### Certification by Vendors

Some certifications substantially improve IT workers' salaries and career prospects

Relevant for narrowly defined roles, or aspects of broader roles

Require passing a written exam

Commonly involves recertification as newer technologies become available

Examples:

- Cisco Certified Network Associate (CCNA)
- Microsoft Certified Professional Developer (MCPD)
- IBM Certified Database Administrator

### Certification by Industry/Professional Organizations

Require a certain level of experience and a broader perspective than vendor certifications

Lag in developing tests that cover new technologies

Examples:

- IEEE-CS Certified Software Development Associate (CSDA)
- IEEE-CS Certified Software Development Professional (CSDP)
- ICCP Certified Associate Computing Professional
- ICCP Certified Computing Professional
  - ICCP = Institute for Certification of Computing Professionals

### Government Licensing

Generally administered at the state level in the United States

- examples: public accountants, doctors, lawyers, engineers that perform engineering services for the public

Potential benefits of government licensing of IT professionals

- encourage IT professionals to follow the highest standards of the profession
- require IT professional to adhere to a standard code of ethics
- violators would be punished by law
- without it, there is less incentive for heightened care, and no concept of malpractice (individual IT professionals held liable for IT negligence)
- licensing of IT professionals may improve today's very complex IT systems

### Government Licensing

Potential problems with government licensing of IT professionals

- there are few international or national licensing programs for IT professionals
- no universally accepted core body of knowledge
- unclear who should manage content and administration of licensing exams
- no administrative body to accredit professional education programs
- no administrative body to assess and ensure competence of individual professionals

### IT Users

Employees' ethical use of IT is an area of growing concern

## Common Ethical Issues for IT Users

### Software piracy

- copying work software for use at home (even when doing *some* work at home) is considered piracy

### Inappropriate use of computing resources

- surf work-unrelated websites
- send questionable email
- etc

### Inappropriate sharing of information

- private data
- confidential information

## Supporting the Ethical Practices of IT Users

### Policies that protect against abuses:

- establish boundaries of acceptable and unacceptable behavior
- enable management to punish violators

### Policy components include:

- defining and limiting the appropriate use of IT resources
- establishing guidelines for use of company software
- structuring information systems to protect data and information
- installing and maintaining a corporate firewall

## Manager's Checklist of Items to Consider when Establishing an IT Usage Policy

Questions	Yes	No
Is there a statement that explains the need for an IT usage policy?	___	___
Does the policy provide a clear set of guiding principles for ethical decision making?	___	___
Is it clear how the policy applies to the following types of workers?		
Employees	___	___
Part-time workers	___	___
Temps	___	___
Contractors	___	___
Does the policy address the following issues?		
Protection of the data privacy rights of employees, customers, suppliers, and others	___	___
Limits and control of access to proprietary company data and information	___	___
The use of unauthorized or pirated software	___	___

## Manager's Checklist of Items to Consider when Establishing an IT Usage Policy

Does the policy address the following issues?		
Employee monitoring, including e-mail, wiretapping and eavesdropping on phone conversations, computer monitoring, and surveillance by video	___	___
Respect of the intellectual rights of others, including trade secrets, copyrights, patents, and trademarks	___	___
Inappropriate use of IT resources, such as Web surfing, e-mailing, and other use of computers for purposes other than business	___	___
The need to protect the security of IT resources through adherence to good security practices, such as not sharing user IDs and passwords, use of "hard-to-guess" passwords, and frequent changing of passwords	___	___
The use of the computer to intimidate, harass, or insult others through abusive language in e-mails and by other means	___	___
Are disciplinary actions defined for IT-related abuses?	___	___
Is there a process for communicating the policy to employees?	___	___
Is there a plan to provide effective, ongoing training relative to the policy?	___	___
Has a corporate firewall been implemented?	___	___
Is the corporate firewall maintained?	___	___

## Summary

### A professional from a legal standpoint

- has passed the state licensing requirements
- has earned the right to practice there

### IT professionals have many different relationships

- each with its own set of ethical issues and potential problems

### Professional code of ethics

- states the principles and core values essential to the work of an occupational group

## Summary (continued)

### Licensing and certification of IT professionals

- many people feel that certification will increase the reliability and effectiveness of information systems
- raises many issues

### IT-related professional organizations have developed codes of ethics

### IT usage policy defines appropriate and inappropriate IT user behavior

### In-Class Exercise: Instructions

Work in groups of 3 students.

Produce one written statement stating and justifying the group's answer to the questions on the next slides.

**Everyone in the group must print their name and write their signature next to it, at the top of the paper.**

- The names are used for attendance.
- Your signature attests that (1) you are present and (2) everyone else whose name appears on the paper is present. False claims will be penalized. I will count the number of people in the room.

Groups will read their statements aloud.

- As many as time permits.

Submit the written statement at the end of class.

### In-Class Exercise: Scenario

**Based on:** Sara Baase, *A Gift of Fire: Social, Legal, and Ethical Issues for Computing and the Internet*, 3<sup>rd</sup> edition (Pearson, 2008), §9.3.2.

The director of a community clinic that serves families with domestic violence problems asks your company to develop and deploy an electronic records system, networked for the clinic's 3 sites, mainly for making appointments (at any site for any other). The system will store first names, sometimes last names, and sometimes addresses of clients. The computers will also be used for email and Web browsing. The director plans to buy a few laptops that staff will bring on house calls and wants the system to be able to store records on the laptops. The clinic's budget is very tight, so the director wants to keep the cost as low as possible.

### In-Class Exercise: Scenario and Questions

You propose several security features, e.g.,

- encryption for email and transmission of records between sites
- security software (anti-virus, anti-spyware) for all PCs and laptops
- encryption of records stored on laptops
- authentication of staff by password plus smartcard or fingerprint
- logging of all accesses and updates to records
- monitoring and controls on staff's email and Web activity

The director, who is not a security expert, says the clinic cannot afford these security features and wants you to develop the system without them. What do you do? E.g.,

- Agree, figuring that it is her responsibility, and her right, to decide.
- Refuse unless the security features that you consider critical are adopted. Which ones do you consider critical? Note that your refusal might impress her with the importance of security and change her mind, but you might lose the job. Does your answer depend on how well your company is doing?
- Add, without charge, the security features you consider critical.